

invention. The hinge device includes longitudinal hollow projection 57 extending from and running along a lower end of display unit 53 and connector assembly 54 for transmitting an electronic signal to display unit 53 from main body 52. Projection 57 is provided with a setting hole H through which the connector assembly 54 is pivotally inserted. The connector assembly 54 includes a T-shaped outer tube 41 having a horizontal portion 10 and a vertical portion 11, and a printed circuit plate board 59 integrally inserted into the tube 41. The horizontal portion 10 is rotatable fitted through the setting hole H into hollow portion 71 of projection 57, being formed having a leading hole 13 on each side of horizontal portion 10 of connector assembly 54, such that cables 12 connected with the printed circuit plate board 59 can be led out of connector assembly 54 and into longitudinal hollow projection 57 of display unit 53. The vertical portion 11 extends out of the setting hole H. The printed circuit plate board 59 has an input connector terminal 14 extending out of the vertical portion 11 toward hole HA in main body 52.

Hole HA, is formed on a main body 52 such that the vertical portion 11 of connector assembly 54 can be tightly inserted therein while the input connector terminal 14 of printed circuit plate board 59 is electrically connected to an output connector terminal (not shown) of main body 52. Accordingly, since horizontal portion 10 of connector assembly 54 is pivotally inserted into hollow portion 71 of projection 57, and vertical portion 11 is tightly fitted into hole HA formed on main body 52, display unit 53 can be foldable onto main body 52 while it rotates about horizontal portion 10 of connector assembly 54. Therefore, the above-described structure enables display unit 53 to be separated from or combined with main body 52 easily and simply by assembling or disassembling connector assembly 54 to or from hole HA, reducing the chance of damaging the computer when maintenance or upgrading is performed, and reducing the amount of time needed to separate/combine the display unit from/to the main body.

According to another feature of the present invention, there is provided hinge attachment units 51 and 40 which are mounted on each side of the main body 52 so as to enhance the pivotable mounting ability of display unit 53 on main body 52 through the insertion of hinge lugs 16a and 16b formed on each side of projection 57 when connector assembly 54, pivotally inserted into hole H in projection 57 of the display unit 53, is inserted into the corresponding hole HA of the main body 52. In the preferred embodiment of the present invention, the hinge attachment unit 40 is fixedly mounted on one side of the main body 52, while the other hinge attachment unit 51 is slidably mounted on the other side of the main body 52. The slidable hinge attachment unit 51 comprises a sliding plate 18, elastically supported by a first spring member 28, in which hinge lug 16b is inserted, a receiving portion 17 on which the sliding plate 18 slides, and a cover portion 19, elastically supported by a second spring member 26, which pulls or pushes the sliding plate 18 such that the hinge lugs 16a and 16b can be separated from or combined with hinge attachment units 40 and 51 respectively.

The receiving portion 17 is fixedly installed on the main body 52 by a bracket 21 through a locking hole 20 formed in the main body 52. The receiving portion 17 is preferably hollow and boxshaped with opened sides, comprising inner bottom surface 22 on which sliding plate 18 slides, top portion 24 forming slit 25 such that vertical lug 34 of sliding plate 18 slides or is included projectingly, vertical supporting plate 27 formed extendedly on the other side, opposite

to the side in which the sliding plate 18 is inserted, such that the second spring member 26 can elastically support the cover portion 19.

Sliding plate 18 comprises vertical plate 30 forming inserting hole 29 through which the hinge lug 16b is inserted, and horizontal plate 32 formed at a right angle to vertical plate 30, which slides on inner bottom surface 22 of the receiving portion 17. Vertical lug 34 is formed projectingly on one side of horizontal plate 32 of sliding plate 18 opposite vertical plate 30, to be engaged with vertical bar 38 of cover portion 19.

Cover portion 19 is installed to be elastically supported by second spring member 26, and pulls or pushes sliding plate 18 to separate or combine hinge lug 16 from or with sliding plate 18. Cover portion 19 is made up of flange portions 36 formed on both the front lower end and a rear lower end of cover portion 19 such that cover portion 19 can be inserted along sliding grooves 35 of main body 52. Cover portion 19 is also made up of an arch-type roof portion 37 which is formed integrally with both flanges 36, and the above mentioned vertical bar 38, extending from a certain portion in the inner surface of the roof portion 37 and engaging vertical lug 34 of sliding plate 18.

The present invention structured as in the above is operated as follows, with reference to FIG. 3. First, a user inserts connector assembly 54 in chamber 58 hollow portion 71 of projection 57 of display unit 53. When the user pulls outwardly on cover portion 19 of the separable hinge attachment unit 51, the user can insert one hinge lug 16a into aperture 39 in fixed hinge attachment unit 40. Connector assembly 54 is then fitted into corresponding hole HA in main body 52. While cover portion 19 is being pulled, the sliding plate 18 is also pulled according to the engagement of vertical lug 34 with vertical bar 38 of cover portion 19. Therefore, the other hinge lug 16b of projection 57 enables the display unit 53 to be preliminarily mounted on the main body 52 without being blocked by the sliding plate 18. Then, if the cover portion 19 returns along the sliding grooves 35, the sliding plate 18 also returns by the biasing force of the first and the second spring members 28 and 26 respectively, causing inserting hole 29 of vertical plate 30 of sliding plate 18 of slidable hinge attachment unit 51 to be fitted about 16b. Thus, display unit 53 is now pivotally attached to main body 52. The procedure for separating the display unit 53 from the main body 52 is carried out in the reverse order as in the above-mentioned description.

In a second embodiment, both hinge attachment units may be slidably mounted to main body 52, allowing the user to pull on either one to attach or detach the display unit to or from main body 52. Thus, in this second embodiment, neither of the hinge attachment units are fixedly attached stationary with respect to main body 52.

The present invention enables a display unit to be separated/combined from/with a main body easily and simply, reducing the chance of damaging the computer when upgrading or performing maintenance, reducing the amount of time needed to separate/combine the display unit from/to the main body.

While the present invention has been particularly shown and described with reference to the particular embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A notebook computer having a hinge system, comprising: